

IN THE CLAIMS

Please cancel Claims 6-9, and Claim 16 .

Please Amend the remaining Claims in accordance with the following mark-up copy:

1. (Currently Amended) A wireless transmission system comprising:

a first wireless device including:

a first receiver that receives at least one a plurality of forward path radio frequency (RF) signals comprising a plurality of different carrier frequencies modulated with a modulation signal, the different carrier frequencies having approximately the same multipath transmission characteristics between the first and second wireless devices,

a demodulator for detecting the modulation signal in said plurality of forward path RF signals,
a synthesizer for generating a plurality of reverse path RF signals from the modulation signal, and

a first transmitter for transmitting said [[a]] plurality of reverse path RF signals having different carrier frequencies, wherein the reverse path RF signals are phase coherent with the at least one forward path RF signal; and

a second wireless device including:

a second transmitter that transmits the at least

~~one~~ the plurality of forward path RF signals received by said first receiver of the first wireless device,

a second receiver that receives the reverse path RF signals, a detector that generates amplitude and phase comparison data based on at least the received reverse path RF signal, and

a controller/processor that generates transmission path data using the detected amplitude and phase data and the carrier frequencies and identifies from the transmission path data time delay information for RF signals traveling in a direct path between the first and second wireless device, whereby error introduced by RF signals traveling in an indirect path is reduced or eliminated.

2. (Currently Amended) The wireless transmission system according to claim 1, wherein said first wireless device further includes a first synthesizer that generates said plurality of reverse path RF signals from the ~~at least one~~ plurality of forward path RF signals, each of said plurality of reverse path RF signal being phase coherent with the ~~at least one~~ plurality of forward path RF signals.

3. (Original) The wireless transmission system according to claim

1, wherein said detector comprises a phase detector that generates quadrature amplitude and phase data.

4. (Currently Amended) The wireless transmission system according to claim 1, wherein the ~~at least one~~ plurality of forward path RF signals and the reverse path[[s]] RF signals are full duplex transmissions.

5. (Currently Amended) The wireless transmission system according to claim 1, wherein the ~~at least one~~ plurality of forward path RF signals and the reverse paths RF signals are half duplex transmissions.

Claims 6-9 have been canceled.

10. (Currently Amended) The wireless transmission system according to claim 1 [[9]], wherein said second wireless device further comprises a synthesizer for generating a plurality of third RF signals that are phase coherent with the modulation signal, wherein said detector includes a phase comparator for phase comparing the plurality of third RF signals and the plurality of reverse path RF signals.

11. (Currently Amended) The wireless transmission system according to claim 1, wherein said second wireless device further comprises a

synthesizer for generating a plurality of third RF signals that are phase coherent with the ~~at least one~~ plurality of forward path RF signals, wherein said detector includes a phase comparator for phase comparing the plurality of third RF signals and the plurality of reverse path RF signals.

12. (Original) The wireless transmission system according to claim 1, wherein the controller/Processor uses a Fourier transform to generate the transmission path data using the detected amplitude and phase data and the carrier frequencies.

13. (Original) The wireless transmission system according to claim 12, wherein the controller/processor further uses a peak search to identify the time delay information.

14. (Currently Amended) A wireless communication device comprising:
a transmitter that transmits ~~at least one~~ a plurality of forward path RF signals comprising a plurality of different carrier frequencies modulated with a modulation signal, the different carrier frequencies having approximately the same multipath transmission characteristics between the first and second wireless devices;

a receiver that receives a sequence of reverse path RF signals from a first wireless communication device, wherein the received reverse path RF signals are phase coherent with the ~~at least one~~

plurality of forward path RF signals;
a synthesizer for generating said forward path RF signals;
a detector that generates amplitude and phase data based on
the received reverse path RF signals and at least one signal of the
~~at least one~~ plurality of forward path RF signals; and
a processor that generates transmission path data using at
least the detected amplitude and phase data and identifying from
the transmission path data time delay information between the
received RF signals traveling in a direct path from the first
wireless device and the received RF signals traveling in at least
one other path from the first wireless device, whereby error
introduced by RF signals traveling in an indirect path is reduced
or eliminated.

15. (Original) The wireless communication device according to claim
14, wherein said detector comprises a phase detector that generates
quadrature amplitude and phase data.

Claim 16 has been canceled.

17. (Original) The wireless communication device according to claim
14, further comprising a synthesizer for generating a plurality of
third RF signals that are phase coherent with the modulation
signal, wherein said detector generates said amplitude and phase
data using the received reverse path RF signals and the generated

third RF signals.

18. (Currently Amended) The wireless communication device according to claim 17, wherein the ~~at least one plurality of~~ forward path RF signals ~~is a~~ are frequency hopping spread spectrum signals.

19. (Currently Amended) The wireless communication device according to claim 14, wherein the ~~at least one forward path RF signal comprises a carrier frequency, and further comprising a~~ synthesizer for generating a plurality of third RF signals that are phase coherent with the ~~carrier frequencyies of the~~ plurality of forward path RF signals, and wherein said detector generates said amplitude and phase data using the received reverse path RF signals and the generated third RF signals.

20. (Currently Amended) The wireless communication device according to claim 14, wherein said transmitter and receiver transmit and receive the ~~at least one plurality of~~ forward path RF signals and the reverse paths RF signals in full duplex.

21. (Currently Amended) The wireless communication device according to claim 14, wherein said transmitter and receiver transmit and receive the ~~at least one plurality of~~ forward path RF signals and the reverse path[[s]] RF signals in half duplex.

22. (Original) The wireless communication device according to claim 14, wherein the processor uses a Fourier transform to generate the transmission path data using the detected amplitude and phase data and the carrier frequencies.

23. (Original) The wireless communication device according to claim 22, wherein the processor further uses a peak search to identify the time delay information.

24. (Original) The wireless communication device according to claim 22, wherein the processor determines the distance between the wireless communication device and the first wireless device based on the time delay information.

25. (Currently Amended) A wireless communication device comprising:
a transmitter that transmits a plurality of forward path signals comprising a plurality of different carrier frequencies modulated with a modulation signal, the different carrier frequencies having approximately the same multipath transmission characteristics between the first and second wireless devices;
a receiver that receives a sequence of reverse path RF signals from a first wireless communication device, wherein the received reverse path RF signals are phase coherent with the plurality of forward path signals;
a synthesizer that generates a plurality of local RF signals

using the plurality of forward path signals;

a phase comparator that generates amplitude and phase data based on the received reverse path RF signals and the local RF signals; and

a processor that generates transmission path data using the detected amplitude and phase data and frequency information of the received reverse path RF signals and identifying from the transmission path data time delay information between the received reverse path RF signals traveling in a direct path from the first wireless device and the received RF signals traveling in at least one other path from the first wireless device, whereby error introduced by RF signals traveling in an indirect path is reduced or eliminated.

26. (Currently Amended) A wireless communication device comprising:

a transmitter that transmits a plurality of forward path signals comprising a plurality of different carrier frequencies modulated with a modulation signal, the different carrier frequencies having approximately the same multipath transmission characteristics between the first and second wireless devices;

a receiver that receives a sequence of reverse path RF signals from a first wireless communication device, wherein the received reverse path RF signals are phase coherent with the forward path signals;

a synthesizer that generates a plurality of local RF signals

that are phase coherent with the forward path signal; a detector that generates amplitude and phase data based on the received reverse path RF signals and the local RF signals; and a processor that calculates a direct path distance between the wireless communication device and the first wireless communication device using the detected amplitude and phase data and frequency information of the received reverse path RF signals, whereby error introduced by RF signals traveling in an indirect path is reduced or eliminated.

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27. (Currently Amended) A wireless communication device comprising:

a transmitter that transmits a plurality of forward path signals comprising a plurality of different carrier frequencies modulated with a modulation signal, the different carrier frequencies having approximately the same multipath transmission characteristics between the first and second wireless devices;;

a receiver that receives a sequence of reverse path RF signals from a first wireless communication device, wherein the received reverse path RF signals are phase coherent with the forward path signal;

detecting means for detecting amplitude and phase data based on the received reverse path RE signals and at least a portion of the forward path signal; and

a processor that calculates a direct path distance between the

wireless communication device and the first wireless communication device using the detected is amplitude and phase data and frequency information of the received reverse path RF signals, whereby error introduced by RF signals traveling in an indirect path is reduced or eliminated.

28. (Currently Amended) A method of operating a wireless communication device comprising:

(1) generating a plurality of forward path signals comprising a plurality of different carrier frequencies modulated with a modulation signal, the different carrier frequencies having approximately the same multipath transmission characteristics between the first and second wireless devices;

transmitting the plurality of forward path signals over a wireless link;

receiving reverse path radio frequency (RF) signals, each of said received RF signals having a different carrier frequency within the frequency range that exhibits substantially the same multipath characteristics and each of said received RF signals having a coherent phase relationship with the forward path signal;

generating amplitude and phase data using at least the received RF signals and the plurality of forward path signals;

storing amplitude and phase data corresponding to each of said received RF signals;

generating Fast Fourier Transform (FFT) data using said stored

amplitude and phase data and said carrier frequencies; and generating from the FFT data time delay information for received RF signals traveling in a direct path from the first wireless device and received RF signals traveling in at least one other path from the first wireless device, whereby error introduced by RF signals traveling in an indirect path is reduced or eliminated.

29. (Currently Amended) The method according to claim 28, wherein the step of generating amplitude and phase data comprises generating local RF signals using the plurality of forward path signals and comparing the phase of the local RF signals and the received RF signals.

30. (Currently Amended) A computer readable storage medium containing instructions for controlling a wireless communication device, comprising instructions for:

generating a plurality of forward path signals comprising a plurality of different carrier frequencies modulated with a modulation signal, the different carrier frequencies having approximately the same multipath transmission characteristics between the first and second wireless devices; [,]

transmitting the plurality of forward path signals over a wireless link; [,] and

calculating transmission path data based on amplitude, phase,

and frequency data, the amplitude and phase data derived from received radio frequency (RF) signals, each of said received RF signals having a different carrier frequency within the frequency range that exhibits substantially the same multipath characteristics and each of said received RF signals having a coherent phase relationship with the forward path signal; and

01 calculating time delay data from the transmission path data, the time delay data representing a time delay of RF signals traveling in a direct path between the wireless communication device and a wireless communication device that transmitted the received RF signals, whereby error introduced by RF signals traveling in an indirect path is reduced or eliminated.
